

## TITLE OF THE INVENTION

Corner Pieces For a Picture Frame

## CROSS REFERENCES TO RELATED APPLICATIONS

This application is a continuation of U.S. Serial No. 10/011,703, filed December 4, 2001,  
now abandoned, which is a continuation of U.S. Serial No. 09/450,039, filed November 29, 1999,  
5 now abandoned, each of which is expressly incorporated herein by reference in its entirety.

## BACKGROUND OF THE INVENTION

### a. Field of the Invention

The invention relates to devices used in framing pictures. Specifically, this invention relates  
to devices used in connecting corners of a picture frames. The invention further relates to decorative  
10 corner embellishments for picture frames. Finally, the device relates to devices intended to aid in  
the framing of pictures, particularly with respect to dimensional aspects of framing.

### b. Description of the Prior Art

Picture frames generally are constructed of more than one elongated members, which are  
miter cut. The elongated members are attached where mitered ends meet to form relatively smooth  
15 and continuous joints. The ends of the cut frame members are attached to form an opening that is  
slightly larger than the contents to be framed to accommodate for installation and display of artwork.  
These frames may consist of miter cut wood, extruded aluminum, or a host of other materials of  
construction.

A variety of methods have been used to provide an attaching mechanism which fastens or  
20 joins frame members. The first group of methods are purely functional. These fastening devices  
joins the ends of the miter cut frame sections. Once these devices are installed, the joined ends  
define the visual transition of a miter joint at the corner of a frame. U.S. Pat. No. 5,058,297 to  
McGinnis discloses a corner fastener which slides into the channels of extruded and mitered frame

(usually aluminum) to create a secure joint, but remains hidden behind the picture and frame. U.S. Pat. No. 5,092,063 to Shultz describes a corner attachment which does not require tools, and can be used with varying thickness of artwork. In all of the examples cited above, the mechanisms serve the function of securely attaching the miter cut ends of frames sections and are concealed from view of display.

5 An alternative configuration of attaching mechanisms serve aesthetic function by being visually exposed. These devices enhance or accentuate the visual transition of a frame corner, while fastening the frame together. U.S. Pat. No. 4,477,990 to Buchanan discloses a device which can accommodate a plurality of cross sections of elongated members. However, the corner piece  
10 disclosed in Buchanan must be custom formed to accommodate each different cross section. Buchanan's device is not an optional design accessory, it is the means for assembling the frame. Buchanan's device is not cut from the same frame stock as the elongated members. Rather, Buchanan's device is fabricated separately. The problem with Buchanan is that the corner devices have aesthetic limitations. Buchanan's device is not an option aesthetic accessory of frame design.  
15 Rather, it is a visually imposed device that is required to assemble the frame. Another example of this type device is disclosed by Johansson in U.S. Pat. No. 4,636,105. In the example cited, the visually exposed mechanism severely limits frame design options. These devices are not an optional accessory of frame design, as they also serve as the required means of frame assembly. These devices must also be separately formed, apart from elongated molding, to accommodate varying  
20 cross-sectional shapes of frame members.

U.S. Pat. No. 5,735,068 to Houssain discloses a corner device which is an optional accessory of frame design. Designed to cover and conceal the miter joints of attached frame members, this decorative embellishment enhances the transitional area of a frame corner. This device, however,

is superficially attached to the exterior corner of the frame with a single set screw. Consequently, it is not secured or integrally fastened into the structure of the frame, and is susceptible to becoming dislodged or displaced. A further limitation with Houssain's device is that the corner piece is adapted to be used only with square or rectangular cross-sectional shapes of framing members. If the frame members, as shown in his drawings, have a cross sectional shape other than rectangular, they will not work with the invention disclosed by Houssain. There is no accommodation made for the fact that the framing members are usually some other shape than rectangular (for example see FIG. 4 of this application). Further, the corner piece itself disclosed by Houssain is exclusively designed for rectangular shaped cross sections of frame members.

In the field of framing, there are numerous problems encountered that relate to the narrow tolerances required between opening a frame and size of artwork. Often, frame sections are cut slightly too short for an assembled frame to properly fit the contents to be framed. Such situations are due to objects being framed that are out of a square, as well as, misalignments of attached mitered ends. Narrow tolerances can also contribute to measuring and cutting mistakes that produce frame members that are slightly too short and, consequently, do not produce enough of an allowance as to accommodate for a proper fit of the artwork to be framed.

It is desirable to have a framing technique where the visually transitional area of a frame corner can have a decorative enhancement, which is an optional design accessory. It is also desirable that such a corner device be integrally fastened into the structure of the frame with existing means for attaching the mitered ends of elongated members. It is further desirable to have a decorative corner device to work readily with existing types and cross sectional shapes of elongated molding stock. It is further desirable to have a device which adds extra dimension to an opening of a frame. Finally, it is desirable to have a device which can be readily replaced, since the corners of a frame

are the portion most likely to be scratched, dented or otherwise damaged.

## SUMMARY OF THE INVENTION

In view of the foregoing disadvantages inherent in known types of picture framing, it is an object of the invention to provide an apparatus which overcomes the various disadvantages of the prior art.

5 It is therefore an object of this invention to provide an optional decorative enhancement, or embellishment, at the mitered joint areas that comprise the corners of a picture frame. The present invention can consist of one, two, or more pieces which are inserted between, and fastened to, the elongated frame members. The corner pieces can and preferably will be of a different color, surface  
10 texture, coating, or have other visual variations which set them off from the remainder of the frame. This gives a unique appearance to the frame.

It is also an object of the invention for the decorative corner devices to be integrally fastened into the structure of the frame with existing attaching mechanism.

It is a further object of this invention to provide corner inserts which give "dimensional flexibility" to those framing artwork. Dimensional flexibility means that the person framing the  
15 artwork may only have to work with the actual dimensions of the object to be framed (rather than dimensions plus allowances for the picture frame). This eliminates a mental step in the process of framing, consequently reducing the potential for mistakes. Typically, when a picture is framed, the person framing the picture must measure the actual dimensions of the artwork to be framed  
20 (including any glazing, matting, and backing). Then, the person adds the specified allowance; for example, one-eighth inch is added to each edge in order to provide a frame opening that has clearance for installation, and can accommodate the potential for future thermal expansion of framed contents. By using the present invention, a person can simply work with the actual dimensions of

the artwork, then use the corner inserts to create such additional dimension as needed to provide the necessary allowances. This dimensional flexibility also allows a person framing the picture to correct for minor mistakes made in measuring artwork and cutting frame members. This dimensional aspect of the invention can also compensate for items to be framed that are out of square and misalignments of attached mitered ends.

It is an object of this invention to allow the corner portion of a picture frame to be replaced. Corners are most susceptible to becoming damaged (dented, scratched, etc.). The present invention allows damaged corners to be replaced rather than requiring replacement of the entire frame.

It is also an object of this invention to allow the frame to be reused when corners are replaced or retrofitted. The present invention allows an existing frame to be updated or given a new look without the need to purchase an entirely new frame. Also, where an existing frame is slightly too small to frame the desired subject, the present invention can be used to enlarge the size of the existing frame by effectively extending the length of the elongated members.

The present invention has as one of its objects the ability to manufacture corner inserts by a variety of methods. The corner inserts can be cut from length molding of a compatible size and shape as the frame members. They can also be separately molded, die cast, or otherwise created completely separate from elongated members. In some cases, it may be desirable to take an impression of a cross section of an existing frame member to create corner pieces which will have a larger, smaller, or otherwise differently sized dimension than the existing frame members.

When a new frame is being constructed, it may be desirable to cut corner pieces from the same or compatible molding stock, and then treat them with a different surface treatment so as to give them a different appearance. That way, the corner pieces have different appearance giving the desired aesthetic effect to the visually transitional area of frame corner. Alternatively, a frame shop

may maintain a bin system having therein elongated molding stock and a bin system having compatible corner pieces. Then when a picture is to be framed, the desired components can be selected for use as elongated frame members or corner pieces respectively.

Another object of the invention is to have corner pieces formed out of a variety of materials with many design options. The present invention can be used with frames made of wood, plastics, polymers, resins, metals, and alloys thereof, and other such materials as are commonly used to manufacture picture frames. Where materials other than aluminum are used, it may be desirable to use novel methods of fastening the corner pieces to the elongated members. For example, as disclosed in U.S. Pat. No. 5,090,835 to Cox, in wooden frames it may be desirable to router a hidden portion of the elongated members near their ends. This routered portion, when ends of elongated members are in abutment, mates with a corner fastener. Alternative fastening means may be required depending upon the type of materials used for the elongated members, the elongated members overall section, shape, and other various factors.

The final object of the invention is to provide for corner pieces for use in particular with wood frames. The problem with corner inserts made of wood, not encountered with other materials, is the weakness of wood materials along grain lines. Wood framing members tend to crack or split along the grain lines when some types of fasteners are applied. Thus, particular care must be taken how the members are fastened together to prevent them from cracking. This problem is addressed by providing complimentary dimensional wood stock having a pre-formed groove therein. The groove serves as a pre-formed channel to receive a fastener such as that disclosed by Cox, below.

It is well known that when a elongated member is cut at a forty-five degree angle to its length, the distance across the forty-five degree cut is the square root of two (approximately 1.414) times the width of the elongated member. The complimentary dimensional wood stock would have

substantially the same shape as the elongated member (compare FIG. 11 with FIG. 12), but it would have a width that is 1.414 times the width of the regular wood stock. Thus, when inserted in between two mitered pieces of elongated members, it would provide a transitional piece pursuant to the present invention. The wooden pieces are then fastened together using any number of well known techniques such as the above-noted fastening technique disclosed by Cox in U.S. Patent No. 5,090,835.

There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in this application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting. As such, those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. Additional benefits and advantages of the present invention will become apparent to those skilled in the art to which the present invention relates from the subsequent description of the preferred embodiment and the appended claims, taken in conjunction with the accompanying drawings. It is important, therefore, that the claims be regarded

as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

Further, the purpose of the foregoing abstract is to enable the U.S. Patent and Trademark Office and the public generally, and especially the scientist, engineers and practitioners in the art who are not familiar with patent or legal terms or phraseology, to determine quickly from a cursory inspection the nature and essence of the technical disclosure of the application. The abstract is neither intended to define the invention of the application which is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

The invention will be better understood and the objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

FIG. 1 is an exploded front view of two joint pieces and two elongated members.

FIG. 2 is a back view of the assembled elements shown in FIG. 1 representing a first embodiment of the present invention.

FIG. 3 is a front view of a frame corner incorporating the first embodiment.

FIG. 4 is a cross section view of one embodiment of an elongated member.

FIG. 5 is a front view of a frame corner with an atypical angle (here, 120°).

FIG. 6 is a front view of a frame corner with a first variation of joint pieces.

FIG. 7 is a front view of a frame corner with a second variation of joint pieces.

FIG. 8 is a top view of a corner piece adapted to receive the elongated members therein.

FIG. 9 is a bottom view of the corner piece adapted to receive the elongated member therein.

FIG. 10 is a cross section of the corner piece having received an elongated member therein.



FIG. 11 is a cross sectional drawing of an elongated member.

FIG. 12 is a cross sectional drawing of a complimentary elongated member having an overall width of approximately 1.414 times the overall width of the elongated member shown in FIG. 11.

FIG. 13 is a bottom view of the complimentary elongated member shown in FIG. 12.

FIG. 14 is a bottom view of two sections of the elongated member shown in FIG. 11 joined together with the complimentary elongated member shown in FIG. 12.

### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to the drawings, where like numerals represent like parts, an apparatus incorporating the principles of the present invention is generally illustrated in the figures. Figure 1 shows an exploded view of frame elongated members 20a and 20b from which two mitered joint piece parts 10a, 10b may be cut. As shown, 10a, 10b are mirror images of one another. Figures 2 and 3 show how these joint piece parts 10a, 10b fit into a corner assembly. Angles A and B, and length L can be adjusted to provide for different shapes, designs and allowances needed. Possible shapes and designs are demonstrated, but not limited to, those in Figures 5, 6, and 7. Most commonly, where a picture frame in question is square or rectangular, and each angle is 90°, each of the joint piece parts 10a, 10b will be parallelograms as shown in Figures 1, 2 and 3.

After two joint pieces 10a, 10b are sandwiched between the miter cut ends of two elongated members 20, the assembly is secured by a corner connector 40. The corner connector 40, shown in Figure 2, fits into a connector channel 22 and is secured by clamping screws 42. The connecting method shown in Figure 2 is convenient for extruded members capable of having a connector channel 22 defined therein. The connector channel 22 could also be cut into the back of a wood, plastic, or other material of construction by using a router or other similar device. The router blade would simply cut the pattern of the connector channel 22 to be desired. Alternatively, where the

elongated members are formed out material other than a metal or metal alloy, a metal or aluminum alloy channel may be inserted into a slot cut into the back of the wood, plastic, or other construction material for the elongated members. This metal or alloy channel would give additional strength to the corner connector 40 when used with the device. For wood frames, the connecting means may simply be glue and nails driven through the various corner pieces (preferably with pilot holes pre-drilled to minimize splitting and cracking) and elongated members to hold the respective parts in place. Alternatively, a connector of the type disclosed by Cox in U.S. Patent No. 5,090,835 could be used.

Where the joint piece is a single modular unit, which fits over the elongated members, a pilot hole through the joint piece may allow for set screws to be driven there through. The set screws would frictionally engage the elongated members, holding them in place in the joint piece, which fits over them. Alternatively, the fastening method disclosed in U.S. Patent No. 4,477,990 to Buchanan could be used. There are a wide variety of means for joining the elongated members of a picture frame. It is intended to incorporate within the scope of the term corner connecting means all of the various methods of joining elongated members which have been used in picture framing and are known to those versed in the art.

Figure 4 shows an example of a cross section of a possible elongated member. The corner connector 40 is held in the connector channel 22 by an inner channel lip 24 and an outer channel lip 26 which protrude slightly at the top of the connector channel 22.

Figures 8 and 9 show a unitary corner piece 50 adapted to receive the elongated members 20 therein. The unitary corner piece 50 takes the place of multiple joint pieces, for example 10a, 10b, shown in Figure 1. The larger cross section of the unitary corner piece 50 shown in Figure 8 and 9 allows it to be used with various sizes of elongated members which are small enough to be received

therein. Preferably, the elongated members 20 are then held in place by a screw 42. Various other means of connecting the corner will be appreciated to those skilled in the art. The unitary corner piece 50 envisioned herein is distinguishable from Buchanan, U.S. Patent No. 4,477,990, in that the present invention discloses a unitary corner piece having a back portion. The Buchanan device covers the front portion of the frame. It does not completely envelope the elongated members. The unitary corner piece 50, as disclosed herein, slidably receives the elongated members. Additional benefits received by this configuration are additional strength added to the frame. This is particularly useful where large frame or heavy contents are being used. The back portion 51 of the unitary corner piece 50 provides additional stability and strength to the unitary corner piece 50.

Figures 11 through 14 show an embodiment of the present invention which is intended primarily to be used with wooden frame stock. FIG. 14 shows the primary stock 54 having a width "W." The picture channel 32a is defined therein, and the stock has, as all stock does, a visible frame surface 34. FIG. 12 shows a complimentary stock 56 having a width of approximately 1.414 times the width "W" of the primary stock 54. The fact that the width of the complimentary stock 56 is wider than that of the primary stock 54 allows this stock to be used between the two mitered cuts as shown in Figure 14. The complimentary stock 56 has a picture channel 32b which is wider than the picture channel 32a of the primary stock 54. The reason this is required is that, as shown in Figure 14, when placed between the two miter cuts, there must be an additional offset to accommodate the corner of the material to be framed. Also defined in the secondary stock 56 is preferably a connector channel 58. The complementary stock 56 is shown from a bottom view in Figure 13. A bottom view of the complementary stock 56 incorporated between mitered ends of elongated pieces of the primary stock 54 is shown in Figure 14. The pieces are held together by a fastener 60. The fastener 60, will preferably be a connector such as disclosed by Cox in U.S. Patent

No. 5,090,835. Alternatively, the pieces may be glued and nailed together (again, preferably with pilot holes to prevent splitting or cracking), or any other well known method of fastening wooden pieces together as known in the prior art. Also, a "v-nail" may be used, but the v-nail works better with plastic than wood. The v-nail is simply a flattened piece of steel having a v-shaped cross section to be nailed into and hold together two members of elongated stock.

### OPERATION OF APPARATUS

A picture frame is typically built in a square or rectangular shape which requires 45 degree miter cuts at the corners. In this configuration, two joint pieces 10a, 10b are cut from a piece of frame stock 48 so that they are mirror images of each other. Two joint pieces 10a, 10b will usually be used for each frame corner, but the number may be varied for different designs. Additionally, these joint pieces 10a, 10b may be colored or may be cut from different styles of elongated member 20 to vary the appearance of the picture frame, or may be formed of a single piece of molded or die-cast material. The miter cut angles may also be varied to provide for additional shapes of picture frames, as in Figure 5, or to provide for additional shapes of joint pieces 10a, 10b, as in Figure 6. Although picture frames are typically formed of squares or rectangles, variations in the corner design allows for many shapes of frame to facilitate various shapes of art. Additionally, joint pieces 10a, 10b need not be parallelograms as in the most typical use, but can be varied as design and taste dictate.

Once the joint pieces 10a, 10b are cut appropriately, the corner is assembled as in Figures 2 and 3. The joint pieces 10a, 10b are put together and then attached to the elongated member 20 so that a continuous structure is formed. The corner connector 40 is placed in the connector channel 22 and is held in place by clamping screws 42, the inner channel lip 24, and the outer channel lip 26.

Preferably, the framing shop where the present invention is used will keep a plurality of

finishes and sizes for each cross sectional type of elongated member it stocks. These pre-cut corner pieces will preferably be kept in a bin system with clear labels to enable a user to conveniently locate the corner piece desired.

Where a framing shop keeps a plurality of corner pieces in bins, if the joint pieces 10a, 10b, together with the elongated members 20 when formed together as previously noted do not have the appropriate dimensional aspects (for example one side of the frame is too short), joint pieces can be selected to slightly varying lengths to accommodate the changes needed in the dimension. Further, the framing shop may have the option of cutting joint pieces having a variety of lengths "L" as shown in Figure 1.

The artwork desired for display is held in the picture channel 32 and is secured there by the interior housing 28 and the exterior housing 30 by spring clips (not shown). A visible frame surface 34 then provides the decorative appearance desired by the combination of the joint pieces 10a, 10b and the elongated member 20.

The procedure for retrofitting an existing frame is similar to that described above. The preliminary step, however, in retrofitting an existing frame is to disassemble the frame. Generally, the fasteners in place in the existing frame must be removed, and the mitered joints must be released. In some cases, this may be as simple as loosening a few screws. In other cases, particularly with wood frames, it may require using a saw or other cutting device to cut along the miter joint.

Once the existing frame is disassembled, the miter cuts at the terminal ends of the elongated members must be cleaned up. This would typically require using a saw to cut off a small length of each terminal end of the elongated member. Then, an appropriate joint piece is selected, and the procedure noted above for new frames is repeated.

Having thus described the field of the invention, the prior art, the attached drawings, the

summary of the invention, and the detailed description of the preferred embodiments, I claim: